IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of: Layzell, *et al.*	)	Confirmation No: 3400
	)	Group Art Unit: 2176
Serial No.: 10/652,787	)	
	)	Examiner: Nguyen, Chau T.
Filed: August 29, 2003	)	
	)	Atty. Docket No.: 200208258-2
For: Page Composition	)	

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Mail Stop: Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

This Appeal Brief under 37 C.F.R. § 41.37 is submitted in support of the Notice of Appeal filed October 23, 2006, responding to the final Office Action mailed August 23, 2006.

It is not believed that extensions of time or fees are required to consider this Appeal Brief. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefor are hereby authorized to be charged to Deposit Account No. 08-2025.

I. Real Party in Interest

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. Related Appeals and Interferences

There are no known related appeals or interferences that will affect or be affected by a decision in this Appeal.

III. Status of Claims

Claims 1-36 stand finally rejected. No claims have been allowed. The final rejections of claims 1-36 are appealed.

IV. Status of Amendments

This application was originally filed on August 29, 2003, with thirty-six (36) claims. In a Response filed June 6, 2006, Applicant amended claims 30 and 34-35. The claims in the attached Claims Appendix (see below) reflect the present state of Applicant's claims.

V. Summary of Claimed Subject Matter

The claimed inventions are summarized below with reference numerals and references to the written description ("specification") and drawings. The subject matter described in the following appears in the original disclosure at least where indicated, and may further appear in other places within the original disclosure.

Embodiments according to independent claim 1 describe a method of composing a page, or a portion of a page, of a document, by a programmed processor (Figure 17, 171). The method comprises receiving a definition of a plurality of objects (Figure 1, 11-15) to be fitted on to the page (Figure 1, 10) and dimensional attributes of each of the objects (Figure 1, 11-15). Applicant's specification, page 1, lines 29-30; page 2, lines 4-8; page 7, lines 28-34. The method further comprises establishing an arrangement of the plurality of objects (Figure 1, 11-15) such that each object lies within a separate rectangle (Figure 2, 5) of a slicing structure dissection of a rectangular area (Figure 2, 20) and receiving and preparing for evaluation for the plurality of objects (Figure 1, 11-15) a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement. Applicant's specification, page 1, lines 30-32; page 8, lines 9-17; page 9, lines 18-22; pages 11-12, lines 17-2. Such a method further comprises finding a slicing structure arrangement (Figure 2) of the plurality of objects (Figure 1, 11-15) with a minimised total cost by means of an iterative process. Applicant's specification, pages 1-2, lines 34-2; pages 14-15, lines 11-33.

Embodiments according to independent claim 20 describe a data carrier having thereon a computer program adapted to program a processor (Figure 17, 171) of a computer system (Figure 17, 175). Applicant's specification, page 3, lines 14-16; pages 7, lines 8-16. The processor (Figure 17, 171) carries out receiving a definition of a plurality of objects (Figure 1, 11-15) to be fitted on to the page (Figure 1, 10) and dimensional attributes of each of the objects (Figure 1, 11-15). Applicant's specification, page 1, lines 29-30; page 2, lines 4-8; page 7, lines 28-34. The processor (Figure 17, 171) further carries out establishing an arrangement of the plurality of objects (Figure 1, 11-15) such that each object lies within a separate rectangle (Figure 2, 5) of a slicing structure dissection of a rectangular area (Figure 2, 20) and preparing for evaluation for the plurality of objects (Figure 1, 11-15) a function which provides a total cost of an arrangement of the plurality of objects (Figure 1, 11-15) based on one or more properties of the arrangement. Applicant's specification, page 1, lines 30-32; page 8, lines 9-17; page 9, lines 18-22; pages 11-12, lines 17-2. The processor (Figure 17, 171) also carries out finding a slicing structure arrangement (Figure 2) of the plurality of objects (Figure 1, 11-15) with a minimised total cost by means of an iterative process. Applicant's specification, pages 1-2, lines 34-2; pages 14-15, lines 11-33.

Embodiments according to independent claim 21 describe a computing apparatus (Figure 17, 175) comprising a processor (Figure 17, 171) programmed to carry out receiving a definition of a plurality of objects (Figure 1, 11-15) to be fitted on to the page (Figure 1, 10) and dimensional attributes of each of the objects, Applicant's specification, page 1, lines 29-30; page 2,

lines 4-8; page 7, lines 28-34; establishing an arrangement of the plurality of objects (Figure 1, 11-15) such that each object lies within a separate rectangle (Figure 2, 5) of a slicing structure dissection of a rectangular area (Figure 2, 20); preparing for evaluation for the plurality of objects (Figure 1, 11-15) a function which provides a total cost of an arrangement of the plurality of objects (Figure 1, 11-15) based on one or more properties of the arrangement, Applicant's specification, page 1, lines 30-32; page 8, lines 9-17; page 9, lines 18-22; pages 11-12, lines 17-2; and finding a slicing structure arrangement (Figure 2) of the plurality of objects (Figure 1, 11-15) with a minimised total cost by means of an iterative process. Applicant's specification, pages 1-2, lines 34-2; pages 14-15, lines 11-33.

Embodiments according to independent claim 22 describe a method of composing a page, or a portion of a page, of a document, by a programmed processor (Figure 17, 171). The method comprises receiving a definition of a plurality of objects (Figure 1, 11-15) to be fitted on to the page (Figure 1, 10) and dimensional attributes of each of the objects, Applicant's specification, page 1, lines 29-30; page 2, lines 4-8; page 7, lines 28-34, and establishing, for the plurality of objects (Figure 1, 11-15), evaluation of a function to represent a total area of an arrangement of the plurality of objects (Figure 1, 11-15). Applicant's specification, page 1, lines 30-32; page 8, lines 9-17; page 9, lines 18-22; pages 11-12, lines 17-2. The method further comprises minimising the function to find a minimised total area arrangement and fitting the minimised total area arrangement to the page (Figure 1, 10). Applicant's specification, page 2, lines 20-26; pages 11-12, lines 17-2.

Embodiments according to independent claim 28 describe a data carrier having thereon a computer program adapted to program a processor (Figure 17, 171) of a computer system (Figure 17, 175) to carry out receiving a definition of a plurality of objects (Figure 1, 11-15) to be fitted on to the page (Figure 1, 10) and dimensional attributes of each of the objects (Figure 1, 10); establishing, for the plurality of objects (Figure 1, 11-15), evaluation of a function to represent a total area of an arrangement of the plurality of objects (Figure 1, 11-15); minimising the function to find a minimised total area arrangement; and fitting the minimised total area arrangement to the page (Figure 1, 10). Applicant's specification, page 1, lines 29-32; page 2, lines 4-8 and 20-26; page 3, lines 14-16; page 7, lines 28-34; page 8, lines 9-17; page 9, lines 18-22; pages 11-12, lines 17-2.

Embodiments according to independent claim 29 describe a computing apparatus comprising a processor (Figure 17, 171) programmed to carry out receiving a definition of a plurality of objects (Figure 1, 11-15) to be fitted on to the page (Figure 1, 10) and dimensional attributes of each of the objects (Figure 1, 11-15); establishing, for the plurality of objects (Figure 1, 11-15), evaluation of a function to represent a total area of an arrangement of the plurality of objects (Figure 1, 11-15); minimising the function to find a minimised total area arrangement; and fitting the minimised total area arrangement to the page (Figure 1, 10). Applicant's specification, page 1, lines 29-32; page 2, lines 4-8 and 20-26; page 3, lines 14-16; page 7, lines 28-34; page 8, lines 9-17; page 9, lines 18-22; pages 11-12, lines 17-2.

Embodiments according to independent claim 30 describe a method of providing a customised document having a plurality of pages. The method

comprises receiving a plurality of selected objects (Figure 1, 11-15) for inclusion (Figure 16, 161) in the document from a database (Figure 17, 172) of two-dimensional objects and an assignation (Figure 16, 162) of each of the selected objects (Figure 1, 11-15) to one of a plurality of groups. Also, each of the selected objects (Figure 1, 11-15) is assigned (Figure 16, 163) to one of the pages of the document. Such a method further comprises producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for one of the pages of the document establishing, for the objects assigned to that page (Figure 1, 10), evaluation of the function and arranging (Figure 16, 164) the objects assigned to the one of the pages in an arrangement such as to minimise the function. Applicant's specification, pages 5-7, lines 20-7; pages 11-12, lines 17-2; pages 14-15, lines 11-33.

Embodiments according to independent claim 34 describe a data carrier having thereon a computer program adapted to program a processor (Figure 17, 171) of a computer system (Figure 1, 175) to carry out receiving a plurality of selected objects (Figure 1, 11-15) for inclusion (Figure 16, 161) in the document from a database (Figure 1, 172) of two-dimensional objects and an assignation (Figure 16, 162) of each of the selected objects (Figure 1, 11-15) to one of a plurality of groups, and an assignation (Figure 16, 163) of each of the selected objects to one of the pages of the document; producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for one of the pages of the document establishing, for the objects assigned to that page (Figure 1, 10), evaluation of the function; and arranging (Figure 16, 164) the objects

assigned to the one of the pages in an arrangement such as to minimise the function. Applicant's specification, page 3, lines 14-16; pages 5-7, lines 20-7; pages 11-12, lines 17-2; pages 14-15, lines 11-33.

Embodiments according to independent claim 35 describe a computing apparatus comprising a processor (Figure 17, 171) programmed to carry out receiving a plurality of selected objects (Figure 1, 11-15) for inclusion (Figure 16, 161) in the document from a database (Figure 17, 172) of two-dimensional objects and an assignation (Figure 16, 162) of each of the selected objects to one of a plurality of groups, and an assignation (Figure 16, 163) of each of the selected objects to one of the pages of the document; producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; and arranging (Figure 16, 164) the objects assigned to the one of the pages in an arrangement such as to minimise the function. Applicant's specification, page 3, lines 14-16; pages 5-7, lines 20-7; pages 11-12, lines 17-2; pages 14-15, lines 11-33.

Embodiments according to independent claim 36 describe a method of composing a page, or a portion of a page, of a document. The method comprises defining a plurality of objects (Figure 1, 11-15) to be fitted on to the page (Figure 1, 10) and dimensional attributes of each of the objects (Figure 1, 11-15). Applicant's specification, page 1, lines 29-30; page 2, lines 4-8; page 7, lines 28-34. The method further comprises establishing an arrangement of the plurality of objects (Figure 1, 11-15) such that each object lies within a separate rectangle (Figure 2, 5) of a slicing structure dissection of

a rectangular area (Figure 2, 20) and establishing a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement. Applicant's specification, page 1, lines 30-32; page 8, lines 9-17; page 9, lines 18-22; pages 11-12, lines 17-2. Such a method comprises finding a slicing structure arrangement (Figure 2) of the plurality of objects (Figure 1, 11-15) with a minimised total cost by means of an iterative process. Applicant's specification, pages 1-2, lines 34-2; pages 14-15, lines 11-33.

VI. Grounds of Rejection to be Reviewed on Appeal

The following grounds of rejections are to be reviewed on appeal:

Claims 1-36 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Geigel* (EP 1220531A2) in view of *Wong* ("A New Algorithm for Floorplan Design").

VII. Arguments

The Appellant respectfully submits that Applicant's claims 1-36 are patentable under 35 U.S.C. §103. The Appellant respectfully requests that the Board of Patent Appeals overturn the final rejection of those claims at least for the reasons discussed below.

A. The *Geigel* Disclosure

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered and possible solutions are scored against different

evaluation criteria and combined to form a final fitness score. Paras. 0052-0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

B. The *Wong* Disclosure

With regard to *Wong*, it teaches a design method for VLSI circuit layout or floorplan design using the method of simulated annealing. *See* Abstract.

C. Applicant's Claim 1

As provided in independent claim 1, Applicants claim:

> A method of composing a page, or a portion of a page, of a document, by a programmed processor comprises:
>
> receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;
>
> ***establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area;***
>
> receiving and preparing for evaluation for the plurality of objects a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement; and
>
> ***finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process.***

(Emphasis added).

Applicants respectfully submit that independent claim 1 is allowable for at least the reason that *Geigel* in view of *Wong* does not disclose, teach, or suggest at least "establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area" and "finding a slicing structure arrangement

of the plurality of objects with a minimised total cost by means of an iterative process," as recited and emphasized above in claim 1.

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered and possible solutions are scored against different evaluation criteria and combined to form a final fitness score. Paras. 0052-0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

Thus, *Geigel* fails to teach or suggest at least "establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area" and "finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process." This deficiency is acknowledged in the Office Action mailed March 6, 2006. The Office Action further states that these features are disclosed in *Wong* and that it would have been obvious to combine the teachings of *Geigel* and *Wong.* Applicants respectfully disagree.

With regard to *Wong*, it teaches a design method for VLSI circuit layout. *Geigel*, on the other hand, provides no suggestion for adopting or incorporating approaches used in VLSI design, as taught in *Wong*, with the systems and methods being used in *Geigel.* Further, *Geigel* teaches an alternative approach to selecting image placement and provides no suggestion for using a slicing structure arrangement. Also, *Geigel* discloses outputting image placement parameters that meet a desired threshold and

does not suggest finding an arrangement having a minimized total cost by means of an iterative process. Therefore, it is not obvious to utilize a slicing structure arrangement from the field of integrated circuit design in methods and systems related to composing a page of a document in the manner claimed. Moreover, *Geigel* does not contemplate work outside the field of document design (or even the narrower field of image organization) such that the proposed combination with *Wong* can be considered obvious. It is noted that VLSI design as described by *Wong* is sufficiently different from document design, and therefore, the proposed combination of *Geigel* and *Wong* is improper and not obvious.

As a result, a *prima facie* case establishing an obviousness rejection by the proposed combination of *Geigel* with *Wong* has not been made. Therefore, the rejections of claim 1 should be withdrawn.

D. Applicant's Claims 2-19

Because independent claim 1 is allowable over the cited art of record, dependent claims 2-19 (which depend from independent claim 1) are allowable as a matter of law for at least the reason that dependent claims 2-19 contain all the features of independent claim 1. For at least this reason, the rejections of claims 2-19 should be withdrawn.

Additionally and notwithstanding the foregoing reasons for the allowability of claim 1, these dependent claims recite further features and/or combinations of features (as is apparent by examination of the claims themselves) that are patentably distinct from the cited art of record. Hence, there are other reasons why these dependent claims are allowable.

For example, the proposed combination of references lacks any evidence of an arrangement of old elements to effect finding a slicing structure arrangement of the plurality of objects in a document with a minimised total cost by means of an iterative process. Further, the *Wong* reference does not disclose the positioning of groups of objects. Therefore, the claimed subject matter in claims 5-8, 11-12, and 16-18 (*e.g.*, language describing groups of objects) produces a more striking result than that possible by the proposed combination and also creates a change in the respective functions of the elements of the combination which is therefore not obvious. *See A. & P. Tea Co. v. Supermarket Corp.*, 340 U.S. 147 (1950).

E. Applicant's Claim 20

As provided in independent claim 20, Applicants claim:

> A data carrier having thereon a computer program adapted to program a processor of a computer system to carry out the following steps:
> receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;
> ***establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area;***
> preparing for evaluation for the plurality of objects a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement; and
> ***finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process***.

(Emphasis added).

Applicants respectfully submit that independent claim 20 is allowable for at least the reason that *Geigel* in view of *Wong* does not disclose, teach, or suggest at least "establishing an arrangement of the plurality of objects such

that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area" and "finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process," as recited and emphasized above in claim 20.

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered, and possible solutions are scored against different evaluation criteria and combined to form a final fitness score. Paras. 0052-0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

Thus, *Geigel* fails to teach or suggest at least "establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area" and "finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process." This deficiency is acknowledged in the Office Action mailed March 6, 2006. The Office Action further states that these features are disclosed in *Wong* and that it would have been obvious to combine the teachings of *Geigel* and *Wong.* Applicants respectfully disagree.

With regard to *Wong*, it teaches a design method for VLSI circuit layout. *Geigel*, on the other hand, provides no suggestion for adopting or incorporating approaches used in VLSI design, as taught in *Wong*, with the systems and methods being used in *Geigel.* Further, *Geigel* teaches an alternative approach to selecting image placement and provides no

suggestion for using a slicing structure arrangement. Also, *Geigel* discloses outputting image placement parameters that meet a desired threshold and does not suggest finding an arrangement having a minimized total cost by means of an iterative process. Therefore, it is not obvious to utilize a slicing structure arrangement from the field of integrated circuit design in methods and systems related to composing a page of a document.

Moreover, *Geigel* does not contemplate work outside the field of document design (or even the narrower field of image organization) such that the proposed combination with *Wong* can be considered obvious. It is noted that VLSI design as described by *Wong* is sufficiently different from document design, and therefore, the proposed combination of *Geigel* and *Wong* is improper and not obvious.

As a result, a *prima facie* case establishing an obviousness rejection by the proposed combination of *Geigel* with *Wong* has not been made. Therefore, the rejections of claim 20 should be withdrawn.

F. Applicant's Claim 21

As provided in independent claim 21, Applicants claim:

> Computing apparatus comprising a processor programmed to carry out the following steps:
>
> receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;
>
> ***establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area;***
>
> preparing for evaluation for the plurality of objects a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement; and

finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process.

(Emphasis added).

Applicants respectfully submit that independent claim 21 is allowable for at least the reason that *Geigel* in view of *Wong* does not disclose, teach, or suggest at least "establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area" and "finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process," as recited and emphasized above in claim 21.

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered and possible solutions are scored against different evaluation criteria and combined to form a final fitness score. Paras. 0052-0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

Thus, *Geigel* fails to teach or suggest at least "establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area" and "finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process." This deficiency is acknowledged in the Office Action of March 6, 2006. The Office Action further states that these features are disclosed in *Wong* and that it would have been

obvious to combine the teachings of *Geigel* and *Wong*. Applicants respectfully disagree.

With regard to *Wong*, it teaches a design method for VLSI circuit layout. *Geigel*, on the other hand, provides no suggestion for adopting or incorporating approaches used in VLSI design, as taught in *Wong*, with the systems and methods being used in *Geigel*. Further, *Geigel* teaches an alternative approach to selecting image placement and provides no suggestion for using a slicing structure arrangement. Also, *Geigel* discloses outputting image placement parameters that meet a desired threshold and does not suggest finding an arrangement having a minimized total cost by means of an iterative process. Therefore, it is not obvious to utilize a slicing structure arrangement from the field of integrated circuit design in methods and systems related to composing a page of a document.

Moreover, *Geigel* does not contemplate work outside the field of document design (or even the narrower field of image organization) such that the proposed combination with *Wong* can be considered obvious. It is noted that VLSI design as described by *Wong* is sufficiently different from document design, and therefore, the proposed combination of *Geigel* and *Wong* is improper and not obvious.

As a result, a *prima facie* case establishing an obviousness rejection by the proposed combination of *Geigel* with *Wong* has not been made. Therefore, the rejections of claim 21 should be withdrawn.

G. Applicant's Claim 22

As provided in independent claim 22, Applicants claim:

> A method of composing a page, or a portion of a page, of a document, by a programmed processor comprising:
> receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;
> ***establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects;***
> ***minimising the function to find a minimised total area arrangement; and***
> ***fitting the minimised total area arrangement to the page.***

(Emphasis added).

Applicants respectfully submit that independent claim 22 is allowable for at least the reason that *Geigel* in view of *Wong* does not disclose, teach, or suggest at least "establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects; minimising the function to find a minimised total area arrangement; and fitting the minimised total area arrangement to the page," as recited and emphasized above in claim 22.

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered, and possible solutions are scored against different evaluation criteria and combined to form a final fitness score. Paras. 0052-0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

Thus, *Geigel* fails to teach or suggest at least "establishing, for the plurality of objects, evaluation of a function to represent a total area of an

arrangement of the plurality of objects; minimising the function to find a minimised total area arrangement; and fitting the minimised total area arrangement to the page." This deficiency is acknowledged in the Office Action of March 6, 2006. The Office Action further states that these features are disclosed in *Wong* and that it would have been obvious to combine the teachings of *Geigel* and *Wong*. Applicants respectfully disagree.

With regard to *Wong*, it teaches a design method for VLSI circuit layout. *Geigel*, on the other hand, provides no suggestion for adopting or incorporating approaches used in VLSI design, as taught in *Wong*, with the systems and methods being used in *Geigel*. Further, *Geigel* discloses outputting image placement parameters that meet a desired threshold and does not suggest "establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects; minimising the function to find a minimised total area arrangement; and fitting the minimised total area arrangement to the page." Moreover, it is not obvious to utilize a VLSI approach from the field of integrated circuit design in methods and systems related to composing a page of a document.

Moreover, *Geigel* does not contemplate work outside the field of document design (or even the narrower field of image organization) such that the proposed combination with *Wong* can be considered obvious. It is noted that VLSI design as described by *Wong* is sufficiently different from document design, and therefore, the proposed combination of *Geigel* and *Wong* is improper and not obvious.

As a result, a *prima facie* case establishing an obviousness rejection by the proposed combination of *Geigel* with *Wong* has not been made. Therefore, the rejections of claim 22 should be withdrawn.

H. Applicant's Claims 23-27

Because independent claim 22 is allowable over the cited art of record, dependent claims 23-27 (which depend from independent claim 22) are allowable as a matter of law for at least the reason that dependent claims 23-27 contain all the features of independent claim 22. For at least this reason, the rejections of claims 23-27 should be withdrawn.

I. Applicant's Claim 28

As provided in independent claim 28, Applicants claim:

> A data carrier having thereon a computer program adapted to program a processor of a computer system to carry out the following steps:
> receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;
> ***establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects;***
> ***minimising the function to find a minimised total area arrangement; and***
> ***fitting the minimised total area arrangement to the page.***

(Emphasis added).

Applicants respectfully submit that independent claim 28 is allowable for at least the reason that *Geigel* in view of *Wong* does not disclose, teach, or suggest at least "establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects; minimising the function to find a minimised total area arrangement; and fitting

the minimised total area arrangement to the page," as recited and emphasized above in claim 28.

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered, and possible solutions are scored against different evaluation criteria and combined to form a final fitness score. Paras. 0052-0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

Thus, *Geigel* fails to teach or suggest at least "establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects; minimising the function to find a minimised total area arrangement; and fitting the minimised total area arrangement to the page." This deficiency is acknowledged in the Office Action of June 6, 2006. However, the Office Action states that these features are disclosed in *Wong* and that it would have been obvious to combine the teachings of *Geigel* and *Wong.* Applicants respectfully disagree.

With regard to *Wong*, it teaches a design method for VLSI circuit layout. *Geigel*, on the other hand, provides no suggestion for adopting or incorporating approaches used in VLSI design, as taught in *Wong*, with the systems and methods being used in *Geigel.* Further, *Geigel* discloses outputting image placement parameters that meet a desired threshold and does not suggest "establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects; minimising the function to find a minimised total area arrangement; and fitting

the minimised total area arrangement to the page." Moreover, it is not obvious to utilize a VLSI approach from the field of integrated circuit design in methods and systems related to composing a page of a document.

Further, *Geigel* does not contemplate work outside the field of document design (or even the narrower field of image organization) such that the proposed combination with *Wong* can be considered obvious. It is noted that VLSI design as described by *Wong* is sufficiently different from document design, and therefore, the proposed combination of *Geigel* and *Wong* is improper and not obvious.

As a result, a *prima facie* case establishing an obviousness rejection by the proposed combination of *Geigel* with *Wong* has not been made. Therefore, the rejections of claim 28 should be withdrawn.

J. Applicant's Claim 29

As provided in independent claim 29, Applicants claim:

> Computing apparatus comprising a processor programmed to carry out the following steps:
> receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;
> ***establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects;***
> ***minimising the function to find a minimised total area arrangement; and***
> ***fitting the minimised total area arrangement to the page.***

(Emphasis added).

Applicants respectfully submit that independent claim 29 is allowable for at least the reason that *Geigel* in view of *Wong* does not disclose, teach, or suggest at least "establishing, for the plurality of objects, evaluation of a

function to represent a total area of an arrangement of the plurality of objects; minimising the function to find a minimised total area arrangement; and fitting the minimised total area arrangement to the page," as recited and emphasized above in claim 29.

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered, and possible solutions are scored against different evaluation criteria and combined to form a final fitness score. Paras. 0052-0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

Thus, *Geigel* fails to teach or suggest at least "establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects; minimising the function to find a minimised total area arrangement; and fitting the minimised total area arrangement to the page." This deficiency is acknowledged in the Office Action of June 6, 2006. The Office Action further states that these features are disclosed in *Wong* and that it would have been obvious to combine the teachings of *Geigel* and *Wong.* Applicants respectfully disagree.

With regard to *Wong*, it teaches a design method for VLSI circuit layout. *Geigel*, on the other hand, provides no suggestion for adopting or incorporating approaches used in VLSI design, as taught in *Wong*, with the systems and methods being used in *Geigel.* Further, *Geigel* discloses outputting image placement parameters that meet a desired threshold and does not suggest "establishing, for the plurality of objects, evaluation of a

function to represent a total area of an arrangement of the plurality of objects; minimising the function to find a minimised total area arrangement; and fitting the minimised total area arrangement to the page." Moreover, it is not obvious to utilize a VLSI approach from the field of integrated circuit design in methods and systems related to composing a page of a document.

Further, *Geigel* does not contemplate work outside the field of document design (or even the narrower field of image organization) such that the proposed combination with *Wong* can be considered obvious. It is noted that VLSI design as described by *Wong* is sufficiently different from document design, and therefore, the proposed combination of *Geigel* and *Wong* is improper and not obvious.

As a result, a *prima facie* case establishing an obviousness rejection by the proposed combination of *Geigel* with *Wong* has not been made. Therefore, the rejections of claim 29 should be withdrawn.

K. Applicant's Claim 30

As provided in independent claim 30, Applicants claim:

> A method of providing a customised document having a plurality of pages, comprising:
> receiving a plurality of selected objects for inclusion in the document from a database of two-dimensional objects and an assignation of each of the selected objects to one of a plurality of groups, and an assignation of each of the selected objects to one of the pages of the document;
> ***producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; and***
> ***arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function.***

(Emphasis added).

Applicants respectfully submit that independent claim 30 is allowable for at least the reason that *Geigel* in view of *Wong* does not disclose, teach, or suggest at least "producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; and arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function," as recited and emphasized above in claim 30.

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered, and possible solutions are scored against different evaluation criteria and combined to form a final fitness score. Paras. 0052-0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

Thus, *Geigel* fails to teach or suggest at least "producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; [and] arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function." This deficiency is acknowledged in the Office Action of June 6, 2006. However, the Office Action states that these features are disclosed in *Wong* and that it would have been obvious to combine the teachings of *Geigel* and *Wong.* Applicants respectfully disagree.

With regard to *Wong*, it teaches a design method for VLSI circuit layout. *Geigel*, on the other hand, provides no suggestion for adopting or incorporating approaches used in VLSI design, as taught in *Wong*, with the systems and methods being used in *Geigel*. Further, *Geigel* discloses outputting image placement parameters that meet a desired threshold and does not suggest "producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; [and] arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function." Moreover, it is not obvious to utilize a VLSI approach from the field of integrated circuit design in methods and systems related to composing a page of a document.

Further, the proposed combination of references lacks any evidence of an arrangement of old elements to effect finding a slicing structure arrangement of the plurality of objects in a document with a minimised total cost by means of an iterative process. For example, the *Wong* reference does not disclose the positioning of groups of objects. Therefore, the claimed subject matter (*e.g.*, language involving groups of objects) produces a more striking result than that possible by the proposed combination and also creates a change in the respective functions of the elements of the combination which is therefore not obvious.

Moreover, *Geigel* does not contemplate work outside the field of document design (or even the narrower field of image organization) such that the proposed combination with *Wong* can be considered obvious. It is noted

that VLSI design as described by *Wong* is sufficiently different from document design, and therefore, the proposed combination of *Geigel* and *Wong* is improper and not obvious.

Hence, a *prima facie* case establishing an obviousness rejection by the proposed combination of *Geigel* with *Wong* has not been made. Therefore, the rejections of claim 30 should be withdrawn.

L. Applicant's Claims 31-33

Because independent claim 30 is allowable over the cited art of record, dependent claims 31-33 (which depend from independent claim 30) are allowable as a matter of law for at least the reason that dependent claims 31-33 contain all the features of independent claim 30. For at least this reason, the rejections of claims 31-33 should be withdrawn.

M. Applicant's Claim 34

As provided in independent claim 34, Applicants claim:

> A data carrier having thereon a computer program adapted to program a processor of a computer system to carry out the following steps:
>
> receiving a plurality of selected objects for inclusion in the document from a database of two-dimensional objects and an assignation of each of the selected objects to one of a plurality of groups, and an assignation of each of the selected objects to one of the pages of the document;
>
> ***producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; and***
>
> ***arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function.***

(Emphasis added).

Applicants respectfully submit that independent claim 34 is allowable for at least the reason that *Geigel* in view of *Wong* does not disclose, teach, or suggest at least "producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; and arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function," as recited and emphasized above in claim 34.

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered, and possible solutions are scored against different evaluation criteria and combined to form a final fitness score. Paras. 0052-0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

Thus, *Geigel* fails to teach or suggest at least "producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; [and] arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function." This deficiency is acknowledged in the Office Action of June 6, 2006. However, the Office Action states that these features are disclosed in *Wong* and that it would have been obvious to combine the teachings of *Geigel* and *Wong.* Applicants respectfully disagree.

With regard to *Wong*, it teaches a design method for VLSI circuit layout. *Geigel*, on the other hand, provides no suggestion for adopting or incorporating approaches used in VLSI design, as taught in *Wong*, with the systems and methods being used in *Geigel*. Further, *Geigel* discloses outputting image placement parameters that meet a desired threshold and does not suggest "producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; [and] arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function." Moreover, it is not obvious to utilize a VLSI approach from the field of integrated circuit design in methods and systems related to composing a page of a document.

Further, the proposed combination of references lacks any evidence of an arrangement of old elements to effect finding a slicing structure arrangement of the plurality of objects in a document with a minimised total cost by means of an iterative process. For example, the *Wong* reference does not disclose the positioning of groups of objects. Therefore, the claimed subject matter (*e.g.*, language involving groups of objects) produces a more striking result than that possible by the proposed combination and also creates a change in the respective functions of the elements of the combination which is therefore not obvious.

Moreover, *Geigel* does not contemplate work outside the field of document design (or even the narrower field of image organization) such that the proposed combination with *Wong* can be considered obvious. It is noted

that VLSI design as described by *Wong* is sufficiently different from document design, and therefore, the proposed combination of *Geigel* and *Wong* is improper and not obvious.

Hence, a *prima facie* case establishing an obviousness rejection by the proposed combination of *Geigel* with *Wong* has not been made. Therefore, the rejections of claim 34 should be withdrawn.

N. Applicant's Claim 35

As provided in independent claim 35, Applicants claim:

> Computing apparatus comprising a processor programmed to carry out the following steps:
> receiving a plurality of selected objects for inclusion in the document from a database of two-dimensional objects and an assignation of each of the selected objects to one of a plurality of groups, and an assignation of each of the selected objects to one of the pages of the document;
> ***producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; and***
> ***arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function.***

(Emphasis added).

Applicants respectfully submit that independent claim 35 is allowable for at least the reason that *Geigel* in view of *Wong* does not disclose, teach, or suggest at least "producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; and arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function," as recited and emphasized above in claim 35.

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered, and possible solutions are scored against different evaluation criteria and combined to form a final fitness score. Paras. 0052-0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

Thus, *Geigel* fails to teach or suggest at least "producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; [and] arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function." This deficiency is acknowledged in the Office Action of June 6, 2006. However, the Office Action states that these features are disclosed in *Wong* and that it would have been obvious to combine the teachings of *Geigel* and *Wong*. Applicants respectfully disagree.

With regard to *Wong*, it teaches a design method for VLSI circuit layout. *Geigel*, on the other hand, provides no suggestion for adopting or incorporating approaches used in VLSI design, as taught in *Wong*, with the systems and methods being used in *Geigel*. Further, *Geigel* discloses outputting image placement parameters that meet a desired threshold and does not suggest "producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects

assigned to that page, evaluation of the function; [and] arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function." Moreover, it is not obvious to utilize a VLSI approach from the field of integrated circuit design in methods and systems related to composing a page of a document.

Further, the proposed combination of references lacks any evidence of an arrangement of old elements to effect finding a slicing structure arrangement of the plurality of objects in a document with a minimised total cost by means of an iterative process. For example, the *Wong* reference does not disclose the positioning of groups of objects. Therefore, the claimed subject matter (*e.g.*, language involving groups of objects) produces a more striking result than that possible by the proposed combination and also creates a change in the respective functions of the elements of the combination which is therefore not obvious.

Moreover, *Geigel* does not contemplate work outside the field of document design (or even the narrower field of image organization) such that the proposed combination with *Wong* can be considered obvious. It is noted that VLSI design as described by *Wong* is sufficiently different from document design, and therefore, the proposed combination of *Geigel* and *Wong* is improper and not obvious.

Hence, a *prima facie* case establishing an obviousness rejection by the proposed combination of *Geigel* with *Wong* has not been made. Therefore, the rejections of claim 35 should be withdrawn.

O. Applicant's Claim 36

As provided in independent claim 36, Applicants claim:

> A method of composing a page, or a portion of a page, of a document, comprising:
> defining a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;
> ***establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area;***
> ***establishing a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement; and***
> ***finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process***.

(Emphasis added).

Applicants respectfully submit that independent claim 36 is allowable for at least the reason that *Geigel* in view of *Wong* does not disclose, teach, or suggest at least "establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area; establishing a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement; and finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process," as recited and emphasized above in claim 36.

Geigel appears to teach at most a system for automatic creation of digital image albums. In this system, *Geigel* teaches "use of a tree structure as illustrated in Fig. 8" to represent a photo album. Para. 0038. Genetic algorithms are considered, and possible solutions are scored against different evaluation criteria and combined to form a final fitness score. Paras. 0052-

0053. Image placement parameters are then outputted for a corresponding final fitness score that exceeds a threshold value. Para. 0011.

Thus, *Geigel* fails to teach or suggest at least "establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area; establishing a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement; and finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process." This deficiency is acknowledged in the Office Action of June 6, 2006. However, the Office Action states that these features are disclosed in *Wong* and that it would have been obvious to combine the teachings of *Geigel* and *Wong.* Applicants respectfully disagree.

With regard to *Wong*, it teaches a design method for VLSI circuit layout. *Geigel*, on the other hand, provides no suggestion for adopting or incorporating approaches used in VLSI design, as taught in *Wong*, with the systems and methods being used in *Geigel*. Further, *Geigel* teaches an alternative approach to selecting image placement and provides no suggestion for using a slicing structure arrangement. Also, *Geigel* discloses outputting image placement parameters that meet a desired threshold and does not suggest finding an arrangement having a minimized total cost by means of an iterative process. Therefore, it is not obvious to utilize a slicing structure arrangement from the field of integrated circuit design in methods and systems related to composing a page of a document.

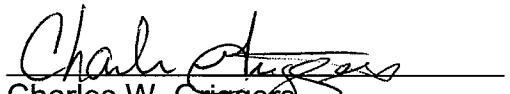
Moreover, *Geigel* does not contemplate work outside the field of document design (or even the narrower field of image organization) such that the proposed combination with *Wong* can be considered obvious. It is noted that VLSI design as described by *Wong* is sufficiently different from document design, and therefore, the proposed combination of *Geigel* and *Wong* is improper and not obvious.

Hence, a *prima facie* case establishing an obviousness rejection by the proposed combination of *Geigel* with *Wong* has not been made. Therefore, the rejections of claim 36 should be withdrawn.

VIII. Conclusion

In summary, it is Applicant's position that Applicant's claims are patentable over the applied cited art references and that the rejection of these claims should be withdrawn. Appellant therefore respectfully requests that the Board of Appeals overturn the Examiner's rejection and allow Applicant's pending claims.

Respectfully submitted,

By: 

Charles W. Griggers
Registration No. 47,283

Claims Appendix under 37 C.F.R. § 41.37(c)(1)(viii)

The following are the claims that are involved in this Appeal.

1. A method of composing a page, or a portion of a page, of a document, by a programmed processor comprises:

receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;

establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area;

receiving and preparing for evaluation for the plurality of objects a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement; and

finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process.

2. A method as claimed in claim 1, wherein the iterative process comprises repeated application of a genetic algorithm.

3. A method as claimed in claim 2, wherein the genetic algorithm is adapted to generate mutations of existing single arrangements and crossovers between pairs of existing arrangements.

4. A method as claimed in claim 1, wherein one or more of the objects in the plurality of objects are fixed either in absolute position in the arrangement, or in position relative to one or more other objects in the plurality of objects.

5. A method as claimed in claim 1, wherein two or more of the objects in the plurality of objects are grouped together into an object group and are constrained to lie within a group rectangle of a slicing structure dissection.

6. A method as claimed in claim 5, wherein the object group is fixed either in absolute position in the arrangement, or in position relative to one or more other groups or objects in the plurality of objects.

7. A method as claimed in claim 5, wherein the iterative process comprises conducting optimising an arrangement of objects within a group and then optimising an arrangement of any groups and ungrouped objects.

8. A method as claimed in claim 7, wherein the iterative process comprises repeatedly conducting the steps of optimising an arrangement of objects within a group and then optimising an arrangement of any groups and ungrouped objects.

9. A method as claimed in claim 7, wherein the iterative process comprises repeated application of a genetic algorithm.

10. A method as claimed in claim 8, wherein the iterative process comprises repeated application of a genetic algorithm.

11. A method as claimed in claim 6, wherein the iterative process comprises optimising an arrangement of objects within a group and then optimising an arrangement of any groups and ungrouped objects.

12. A method as claimed in claim 11, wherein the iterative process comprises repeatedly conducting the steps of optimising an arrangement of objects within a group and then optimising an arrangement of any groups and ungrouped objects.

13. A method as claimed in claim 11, wherein the iterative process comprises repeated application of a genetic algorithm.

14. A method as claimed in claim 12, wherein the iterative process comprises repeated application of a genetic algorithm.

15. A method as claimed in claim 1, wherein one of the one or more properties of the arrangement is the total area occupied by the arrangement.

16. A method as claimed in claim 1, wherein the plurality of objects form two or more groups, and wherein one of the one or more properties is a measure of the proximity to each other of objects which are members of the same group.

17. A method as claimed in claim 16, wherein the proximity is measured by a total distance of lines joining one group member to another group member, such that every member of a group with more than one member has at least one line joined thereto.

18. A method as claimed in claim 17, wherein each group member is joined by one and only one line to every other member of the same group.

19. A method as claimed in claim 1, wherein one of the one or more properties is the aspect ratio of the arrangement.

20. A data carrier having thereon a computer program adapted to program a processor of a computer system to carry out the following steps:

receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;

establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area;

preparing for evaluation for the plurality of objects a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement; and

finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process.

21. Computing apparatus comprising a processor programmed to carry out the following steps:

receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;

establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area;

preparing for evaluation for the plurality of objects a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement; and

finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process.

22. A method of composing a page, or a portion of a page, of a document, by a programmed processor comprising:

receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;

establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects;

minimising the function to find a minimised total area arrangement; and

fitting the minimised total area arrangement to the page.

23. A method as claimed in claim 22, wherein the step of minimising the function is constrained such that the minimised total area arrangement has a similar aspect ratio to the page, and wherein the step of fitting the minimised total area arrangement to the page comprises scaling the minimised total area arrangement.

24. A method as claimed in claim 22, wherein the step of minimising the function is constrained such that no dimension of the minimised total area arrangement is greater than a corresponding dimension of the page, and wherein the step of fitting the minimised total area arrangement to the page comprises separating adjacent objects according to a separation rule.

25. A method as claimed in claim 22, wherein the function depends on the aspect ratio of the arrangement, such that minimisation of the function produces a minimised total area arrangement which is a cooptimisation of total area and of the aspect ratio.

26. A method as claimed in claim 22 wherein minimising the function is carried out by means of an iterative process.

27. A method as claimed in claim 26, wherein the iterative process comprises repeated application of a genetic algorithm.

28. A data carrier having thereon a computer program adapted to program a processor of a computer system to carry out the following steps:

receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;

establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects;

minimising the function to find a minimised total area arrangement; and

fitting the minimised total area arrangement to the page.

29. Computing apparatus comprising a processor programmed to carry out the following steps:

receiving a definition of a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;

establishing, for the plurality of objects, evaluation of a function to represent a total area of an arrangement of the plurality of objects;

minimising the function to find a minimised total area arrangement; and

fitting the minimised total area arrangement to the page.

30. A method of providing a customised document having a plurality of pages, comprising:

receiving a plurality of selected objects for inclusion in the document from a database of two-dimensional objects and an assignation of each of the selected objects to one of a plurality of groups, and an assignation of each of the selected objects to one of the pages of the document;

producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; and

arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function.

31. A method as claimed in claim 30, wherein the step of arranging the objects comprises dividing the page into regions and making separate arrangements in each of the regions.

32. A method as claimed in claim 30, wherein said step of arranging the objects comprises establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area and finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process.

33. A method as claimed in claim 32, wherein the iterative process comprises repeated application of a genetic algorithm.

34. A data carrier having thereon a computer program adapted to program a processor of a computer system to carry out the following steps:

receiving a plurality of selected objects for inclusion in the document from a database of two-dimensional objects and an assignation of each of the selected objects to one of a plurality of groups, and an assignation of each of the selected objects to one of the pages of the document;

producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; and

arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function.

35. Computing apparatus comprising a processor programmed to carry out the following steps:

receiving a plurality of selected objects for inclusion in the document from a database of two-dimensional objects and an assignation of each of the selected objects to one of a plurality of groups, and an assignation of each of the selected objects to one of the pages of the document;

producing a function dependent on a total area of the arrangement and on proximity to each other of objects in the same group and for said one of the pages of the document establishing, for the objects assigned to that page, evaluation of the function; and

arranging the objects assigned to the said one of the pages in an arrangement such as to minimise the function.

36. A method of composing a page, or a portion of a page, of a document, comprising:

defining a plurality of objects to be fitted on to the page and dimensional attributes of each of the objects;

establishing an arrangement of the plurality of objects such that each object lies within a separate rectangle of a slicing structure dissection of a rectangular area;

establishing a function which provides a total cost of an arrangement of the plurality of objects based on one or more properties of the arrangement; and

finding a slicing structure arrangement of the plurality of objects with a minimised total cost by means of an iterative process.

Evidence Appendix under 37 C.F.R. § 41.37(c)(1)(ix)

There is no extrinsic evidence to be considered in this Appeal. Therefore, no evidence is presented in this Appendix.

Related Proceedings Appendix under 37 C.F.R. § 41.37(c)(1)(x)

There are no related proceedings to be considered in this Appeal. Therefore, no such proceedings are identified in this Appendix.